

# Jorge Almodovar, PhD

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## EDUCATION

- Post-Doctoral Scholar, Grenoble Institute of Technology, 2011 – 2013  
Advisor: Prof. Catherine Picart  
  
PhD in Chemical Engineering, Colorado State University, 2011  
Dissertation title: *Polysaccharide-based nanostructures for growth factor delivery and mesenchymal stem cells activation*  
Thesis advisor: Prof. Matt Kipper
- BS in Chemical Engineering, Iowa State University, 2007
- University of Oviedo, Spain, Summer 2006  
Study abroad program: International Summer Course in Chemical Engineering

## PROFESSIONAL EXPERIENCE

- October 2019 – Present. Adjunct Professor, Bioengineering Graduate Program, University of Puerto Rico Mayaguez, Mayaguez, PR.
- August 2018 – Present. Adjunct Professor, Department of Biomedical Engineering, University of Arkansas, Fayetteville, AR.
- Affiliated August 2018 – Present. Professor, Cell and Molecular Biology Graduate Program, University of Arkansas, Fayetteville, AR.
- August 2018 – Present. Assistant Professor, Ralph E. Martin Department of Chemical Engineering, University of Arkansas, Fayetteville, AR.
- January 2014 – June 2018. Program Coordinator, Alfred P. Sloan Program of Exemplary Mentoring, University of Puerto Rico Mayaguez, Mayaguez, PR.
- August 2014 – June 2018. Assistant Professor, Bioengineering Program, University of Puerto Rico Mayaguez, Mayaguez, PR.
- September 2013 – June 2018. Assistant Professor, Department of Chemical Engineering, University of Puerto Rico Mayaguez, Mayaguez, PR.
- November 2011 – August 2013. Post-Doctoral Scholar, LMGP, Grenoble Institute of Technology, Grenoble, France.
- August 2007 – August 2011. Graduate Research Assistant, Department of Chemical and Biological Engineering, Colorado State University, Fort Collins, CO.
- May 2009 – August 2009. Research Intern, Empirical Labs, Fort Collins, CO.
- January 2006 – May 2007. Undergraduate Research Assistant, Iowa State University, Department of Chemical and Biological Engineering, Ames, IA. Advisor: Prof. Surya Mallapragada.

## AWARDS AND HONORS

- Sigma Xi Honors Society (2021)
- University of Arkansas 2020 Chemical Engineering Outstanding Research Award (2021)
- Ralph E. Powe Junior Faculty Enhancement Award (2020-21)
- Journal of Materials Chemistry B Emerging Investigator (2020)
- ACS Biomaterials Science and Engineering Early Career Editorial Board Member (2018)
- Ray C. Adam Chair in Chemical Engineering, University of Arkansas (2018)
- University of Puerto Rico Mayaguez Distinguished Professor of Chemical Engineering for academic year 2015 – 2016 (awarded Spring 2017)
- SHPE Hispanic Faculty Congress Awardee (2015)
- AIChE Janice Lumpkin Travel Award (2014)
- Biomedical Engineering Society Innovation and Career Development Travel Award (2013)
- Poster Prize sponsored by Acta Biomaterialia at the FEBS Biological Surfaces and Interfaces Workshop, Catalonia, Spain (2013)
- Nanosciences Foundation Poster Award 6<sup>th</sup> NaMiECeB Workshop, Grenoble, France (2013)
- Whitaker Travel Enhancement Fund (2012)
- Whitaker International Program (2011-2013)
- Graduate Assistantship, Colorado State University (2007-2011)
- Colorado Graduate Grant (2007-2011)
- Bridge to the Doctorate Fellowship, Colorado State University (2007-2008)
- McNair Fellowship, Colorado State University (2007-2008)
- Cargill Oviedo Scholar (2006)
- Omega Chi Epsilon (2006-2007)
- American Chemical Society Scholar (2003-2007)
- Gates Millennium Scholar (2003-2009)

## LANGUAGES

Fluent in both oral and written English and Spanish. Beginner level of French.

## RESEARCH SUPPORT

### Current Research Support

- Arkansas Biosciences Institute (Jul 1, 2021 – May 15, 2022). Title: Engineering a cell coating for MSCs to enhance homing capacity and treatment for acute kidney injury. **PI: J Almodovar**. Co-PI: L. Juncos. Amount: \$43,423
- Arkansas Biosciences Institute (Jul 1, 2021 – May 15, 2022). Title: Orientationally Defined Biomaterials for Deterministic Proliferation of Neural Cells. PI: K. Nayani, **Co-PI: J Almodovar**. Amount: \$50,000
- USDA-NIFA, (June 2021 – May 2025). Title: Managing pain in cattle undergoing castration using a biodegradable microneedle patch containing meloxicam. PI: J. Powell, **Co-PI: J Almodovar**. Amount 500,000
- NSF (Apr 2021 – Apr 2024). Title: Identifying hMSC interaction pathways in soluble interferon-gamma and stratified collagen/ heparin coatings for the manufacturing of therapeutic cells. **PI: J Almodovar** Co-PI: R. Rao Amount \$486,442
- NSF (July 2020 – June 2022). Title: LSAMP BD: University of Arkansas ARK-LSAMP. PI: J. Steinmetz. **Co-PI & Site Director: J Almodovar**. Amount: \$1,075,000

- University of Arkansas, Chancellor's Innovation Funds (Jul 1, 2019 – Dec 30, 2021). Title: Innovation in Livestock Pain Management: A Biopolymer Microneedle Patch for Transdermal Drug Delivery. **PI: J Almodovar**. Co-PIs: L. Greenlee, J. Powell. Amount: \$119,268
- University of Arkansas, Commercialization Fund (Sep 2020 – Dec 2021). Title: Novel bi-layered membranes for hydraulic fracturing flow back and produced water treatment via membrane distillation. **PI: J Almodovar**. Co-PI: R. Wickramasinghe. Amount \$37,500
- Ralph E. Powe Junior Faculty Enhancement Award (Oct 2020 – Sep 2021). Title: Collagen/heparin microcarrier coatings for enhanced mesenchymal stromal cell manufacturing. **PI: J Almodovar** Amount: \$10,000

### Completed Research Support

- NSF MAST Center (Dec 15, 2019 – Dec 14, 2020). Title: Combined electrocoagulation and reverse osmosis for brackish groundwater treatment. PI: R. Wickramasinghe, Co-**PI: J Almodovar**. Amount: \$54,220
- Arkansas Biosciences Institute (Jul 1, 2020 – May 15, 2021). Title: Engineering biomimetic surfaces for enhanced neural tissue engineering. **PI: J Almodovar**. Co-PI: S. Servoss. Amount: \$55,206
- University of Arkansas, Engineering Research and Innovation Seed Funding Program (Jan 2020 – Dec 2020). Title: Collagen/heparin microcarrier coatings for enhanced mesenchymal stromal cell manufacturing. **PI: J Almodovar**. Co-PI: R. Rao. Amount \$25,000
- Arkansas Biosciences Institute (Jul 1, 2019 – May 15, 2020). Title: Engineering biomimetic surfaces for enhanced neural tissue engineering. **PI: J Almodovar**. Co-PI: S. Servoss. Amount: \$40,777
- University of Arkansas, Chancellor's Commercialization Funds (Jul 1, 2019 – Dec 31, 2019). Title: Novel Amphiphobic and Anti-Fouling Electrospun Membranes for Membrane Distillation. **PI: J Almodovar**. Co-PI: R. Wickramasinghe. Amount: \$20,000
- University of Arkansas, Provost Collaborative Research Grant (Jan 1, 2019 – June 30, 2019). **PI: J Almodovar**. Amount: \$3000
- NSF ERC (Oct 1, 2017 – Sep 30, 2022) Title: Engineering Research Center for Cell Manufacturing Technologies. PI Krishnendu Roy. Georgia Institute of Technology. **Senior Personnel: Jorge Almodovar**. Total Amount: \$3,500,000
- NIH NIGMS/INBRE (Jun 1, 2016 – May 31 2018) Title: Regeneration of Damaged Neural Tissue Using a Collagen Scaffold Containing Neurotrophins. A sub-project under "Advancing Competitive Biomedical Research in Puerto Rico" PI: Jose Rodriguez-Medina. University of Puerto Rico Mayaguez. **PI of sub-award J. Almodovar**. Total amount: \$200,000
- NSF REU Site (Jan 1, 2015 – Dec 31 2017) Title: Research Experiences for Undergraduates in Reconfigurable and Multifunctional Soft Materials at UPRM. PI: Ubaldo Cordova. University of Puerto Rico Mayaguez. **Senior Personnel: Jorge Almodovar**. Total amount: \$275,000
- NSF EPSCoR/RII Start-Up Funds for new Faculty (Aug 1, 2015 – July 31, 2017) Title: Osteoinductive Integrin-Containing Biopolymeric Nano-Coatings for Bone Repair. University of Puerto Rico Mayaguez. **PI: J Almodovar**. Total Amount: \$200,000
- Puerto Rico Science, Technology, & Research Trust: Small Research Grant Program (Jan 1, 2016 – Aug 31, 2017) Title: Osteoinductive Integrin-Containing Biomaterials for Bone Repair. University of Puerto Rico Mayaguez. **PI: J Almodovar**. Total Amount: \$70,000
- DoD/ARO 66323-RT-REP (Feb 1, 2015 – Jan 31, 2016) Title: Acquisition of Infrared Variable Angle Spectroscopic Ellipsometer (IR-VASE). University of Puerto Rico Mayaguez. **PI: J Almodovar**. Total Amount: \$219,387.00

- University of Puerto Rico Mayaguez, Dean of Engineering's Office, Start-Up Funds for new Faculty (Sep 1, 2013 – May 31, 2014). **PI: J Almodovar**. Total amount: \$20,000

## RESEARCH INTERESTS

Polymeric Biomaterials, Cell-Material Interactions, Growth Factor Presentation, Biomimetic Materials, Electrospinning, Layer-by-Layer Films, Biomaterial Surface Modification, Gradients in Physical and Chemical Cues, Polysaccharide-Based Biomaterials, Neural Tissue Regeneration, Bone Tissue Regeneration, Collagen-Based Biomaterials, Cell and Tissue Engineering, Regenerative Medicine, Cell Manufacturing

## SCIENTIFIC PUBLICATIONS (peer reviewed)

1. Timsina H., McTyer J., Rao R.R., **Almodovar J.**; "A comparative evaluation of layer-by-layer assembly techniques for surface modification of microcarriers used in human mesenchymal stromal cell manufacturing" *Bioengineering and Translational Medicine*, **2021**, submitted
2. Haseli M., Pinzon-Herrera L.C., **Almodovar J.**; "Crosslinked layered surfaces of heparin and poly(L-lysine) enhance mesenchymal stromal cells behavior in the presence of soluble interferon gamma" *Cells Tissues Organs*, **2021**, submitted
3. Haseli M., Castilla-Casadio D.A., Pinzon-Herrera L.C., Hillsley A., Miranda-Munoz K.A., Sivaraman S., Rosales A.M., Rao R.R., **Almodovar J.**; "Immunomodulatory functions of human mesenchymal stromal cells are enhanced when cultured on HEP/COL multilayers supplemented with Interferon-gamma" *Advanced NanoBiomed Research*, **2021**, submitted
4. Castilla-Casadio D.A., Miranda-Muñoz K.A., Roberts J.L., Crowell A.D., Gonzalez-Nino D., Choudhury D., Aparicio-Solis, F.O., Servoss S.L., Rosales A.M., Prinz G., Zou M., Zhang Y., Coetzee J.F., Greenlee L.F., Powell J., and **Almodovar J.**; "Biodegradable microneedle patch for delivery of meloxicam for managing pain in cattle" *Macromolecular Materials and Engineering*, **2021**, submitted
5. Reyes-Ramos A.M., Alvarez-Garcia Y.R., Solodin N., **Almodovar J.**, Alarid E., Torres-Garcia W., Domenech M.; "Collagen I fibrous substrates modulate the growth and secretome of Luminal A breast tumor cells in a hormone-restricted microenvironment" *ACS Biomaterials Science and Engineering*. **2021**, <https://doi.org/10.1021/acsbiomaterials.0c01803>
6. Chiao, Y.-H.; Sengupta A.; Ang, M.B.M.Y.; Chen S-T; Teow Y.H.; **Almodovar, J.**; Hung W-S; Wickramasinghe, S.R.; "Application of Zwitterion in Forward Osmosis: A short review" *Polymers*, **2021**, <https://doi.org/10.3390/polym13040583>
7. Chiao, Y.-H.; Yap Ang, M.B.M.; Huang Y.-X.; DePaz, S.S.; Chang, Y.; **Almodovar, J.\***; Wickramasinghe, S.R.\*; "A "graft to" electrospun zwitterionic bilayer membrane for separation of hydraulic fracturing produced water via membrane distillation" *Membranes*, **2020**, 10, 402 \*Co-corresponding authors. <https://doi.org/10.3390/membranes10120402>
8. Castilla-Casadio D.A., Timsina H, Haseli M, Pinzon-Herrera L, Chiao Y.-H, Wickramasinghe S.R., **Almodovar J.**; "Methods for the assembly and characterization of polyelectrolyte multilayers as microenvironments to modulate human mesenchymal stromal cell response" *ACS Biomaterials Science and Engineering*. **2020**, 6, 12, 6626-6651. <https://doi.org/10.1021/acsbiomaterials.0c01397>
9. Chiao, Y.-H.; Chen, S.-T.; Yap Ang, M.B.M.; Patra, T.; Castilla-Casadio, D.A.; Fan, R.; **Almodovar, J.**; Hung, W.-S.; Wickramasinghe, S.R. High-Performance Polyacrylic Acid-Grafted PVDF Nanofiltration Membrane with Good Antifouling Property for the Textile Industry. *Polymers* **2020**, 12, 2443. <https://doi.org/10.3390/polym12112443>
10. Castilla-Casadio D.A., Carlton H., Gonzalez-Nino D., Miranda-Muñoz K.A., Daneshpour R., Huitink D., Prinz G., Powell J., Greenlee L., **Almodovar J.**; "Design, Characterization, and

- Modeling of a Chitosan Microneedle Patch for Transdermal Delivery of Meloxicam as a Pain Management Strategy for Use in Cattle” *Materials Science and Engineering C*, **2021**, 118, 111544, <https://doi.org/10.1016/j.msec.2020.111544>
11. Pinzon-Herrera L., Mendez J., Mulero A., **Almodovar J.**; “Real-time monitoring of human Schwann cells on heparin-collagen coatings reveals enhanced adhesion and growth factor response”. *Journal of Materials Chemistry B*. **2020**, 8, 8809, <https://doi.org/10.1039/D0TB01454K>
  12. Cifuentes, S., Priyadarshani, P., Castilla-Casadiago, D., Mortensen, L., **Almodóvar, J.**, Domenech, M.; “Heparin/Collagen Surface Coatings Modulate the Growth, Secretome and Morphology of Human Mesenchymal Stromal Cell Response to Interferon Gamma” *Journal of Biomedical Materials Research A*, **2020**, <https://doi.org/10.1002/jbm.a.37085>
  13. Chiao, Y.-H.; Chen, S.-T.; Sivakumar M.; Ang, M.B.M.Y.; Patra, T.; **Almodovar, J.**; Wickramasinghe, R.; Hung, W.-S.; Lai, J.-Y. “Zwitterionic Polymer Brush Grafted on Polyvinylidene Difluoride Membrane Promoting Enhanced Ultrafiltration Performance with Augmented Antifouling Property”. *Polymers* **2020**, 12, 1303. <https://doi.org/10.3390/polym12061303>
  14. Chiao, Y.-H.; Patra, T.; Ang, M.B.M.Y.; Chen, S.-T.; **Almodovar, J.**; Qian, X.; Wickramasinghe, R.; Hung, W.-S.; Huang, S.-H.; Chang, Y.; Lai, J.-Y. “Zwitterion Co-Polymer PEI-SBMA Nanofiltration Membrane Modified by Fast Second Interfacial Polymerization”. *Polymers* **2020**, 12, 269. <https://doi.org/10.3390/polym12020269>
  15. Castilla-Casadiago D.A., Reyes-Ramos A.M., Domenech M., **Almodovar J.**; “Effects of Physical, Chemical, and Biological Stimulus on h-MSC Expansion and Their Functional Characteristics” *Annals of Biomedical Engineering*, 48, **2020**, 519-535. <https://doi.org/10.1007/s10439-019-02400-3>
  16. Castilla-Casadiago D.A., Garcia J.R., Garcia A.J., **Almodovar J.**; “Collagen/Heparin Coatings Improve Human Mesenchymal Stem Cells Response to Interferon Gamma” *ACS Biomaterials Science and Engineering*, 5(6), **2019**, 2793-2803. <https://doi.org/10.1021/acsbomaterials.9b00008>
  17. Castilla-Casadiago D.A., Pinzon-Herrera L., Perez-Perez M., Quiñones-Colón B.A., Suleiman D., **Almodovar J.**; “Simultaneous characterization of physical, chemical, and thermal properties of polymeric multilayers using infrared spectroscopic ellipsometry”, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 553, **2018**, 155-168. <https://doi.org/10.1016/j.colsurfa.2018.05.052>
  18. Vega-Figueroa K., Santillán J., Ortiz-Gómez V., Ortiz-Quiles E.O., Quiñones-Colón B.A, Castilla-Casadiago D.A., **Almodovar J.**, Bayro M.J., Rodríguez-Martínez J.A, and E. Nicolau; “Aptamer-Based Impedimetric Assay of Arsenite in Water: Interfacial Properties and Performance”, *ACS Omega*, 3(2), **2018**, 1437-1444. <https://doi.org/10.1021/acsomega.7b01710>
  19. Ayala-Caminero R., Pinzon-Herrera L., Rivera-Martinez C., **Almodovar J.**; “Polymeric scaffolds for three-dimensional culture of nerve cells: a model of peripheral nerve regeneration”, *MRS Communications*, 7(3), **2017**, 391-415. <https://doi.org/10.1557/mrc.2017.90>
  20. Castilla Casadiago D., Maldonado M., Sundaram P., **Almodovar J.**; “Green electrospinning of a collagen/hydroxyapatite composite nanofibrous scaffold”, *MRS Communications*, 6(4), **2016**, 402-407. <https://doi.org/10.1557/mrc.2016.43>
  21. Castilla Casadiago D., Ramos Avilez H. V., Herrera-Posada S., Calcagno B., Loyo L., Shipmon J., Acevedo A., Quintana A., **Almodovar J.**; “Engineering of a stable collagen nanofibrous scaffold with tunable fiber diameter, alignment, and mechanical properties”, *Macromolecular Materials and Engineering*, 301(9), **2016**, 1064-1075. <https://doi.org/10.1002/mame.201600156>

22. Caridade SG., Monge C., **Almodovar J.**, Guillot R., Lavaud J., Josserand V., Coll JL., Mano JF., Picart C.; “Myoconductive and osteoinductive free-standing polysaccharide membranes”, *Acta Biomaterialia*, 15, **2015**, 139-149. <https://doi.org/10.1016/j.actbio.2014.12.027>
23. Monge C., **Almodóvar J.**, Boudou T., Picart C.; “Spatio-temporal control of LbL films for biomedical applications: from 2D to 3D”, *Advanced Healthcare Materials*, 4(6), **2015**, 811-830. <https://doi.org/10.1002/adhm.201400715>
24. Dalonneau F., Liu X.Q., Sadir R., **Almodóvar J.**, Mertani H.C., Brucker F., Albiguez-Rizo C., Weidenhaupt M., Lortat-Jacob H., Picart C.; “The effect of delivering the chemokine SDF-1 $\alpha$  in a matrix-bound manner on myogenesis”, *Biomaterials*, 35(15), **2014**, 4525-4535. <https://doi.org/10.1016/j.biomaterials.2014.02.008>
25. **Almodóvar J.**, Guillot R, Monge C., Vollaire J., Selimović Š., Luc-Coll J., Khademhosseini A., Picart C.; “Spatial patterning of BMP-2 and BMP-7 on biopolymeric films and the guidance of muscle cell fate”, *Biomaterials*, 35(13), **2014**, 3975-3985. <https://doi.org/10.1016/j.biomaterials.2014.01.012>
26. **Almodóvar J.**, Crouzier T., Selimović Š., Boudou T., Khademhosseini A., Picart C.; “Gradients of Physical and Biochemical Cues on Polyelectrolyte Multilayer Films Generated via Microfluidics”, *Lab on a Chip*, 13 (8), **2013**, 1562-1570. <https://doi.org/10.1039/C3LC41407H>
27. **Almodóvar J.**, Mower J., Banerjee A., Sarkar A., Ehrhart N.P., Kipper M.J.; “Chitosan-Heparin Polyelectrolyte Multilayers on Cortical Bone: Periosteum-Mimetic, Cytophillic, Antibacterial Coatings”, *Biotechnology and Bioengineering*, 110(2), **2013**, 609-618. <https://doi.org/10.1002/bit.24710> \*\*Article featured on the Spotlights section of Vol 110, Issue 2\*\*
28. Volpato F.Z., **Almodóvar J.**, Erickson K., Popat K.C., Migliaresi C., Kipper M.J.; “Preservation of FGF-2 Bioactivity Using Heparin-Based Nanoparticles, and Their Delivery From Electrospun Chitosan Fibers”, *Acta Biomaterialia*, 8, **2012**, 1551-1559. <https://doi.org/10.1016/j.actbio.2011.12.023>
29. **Almodóvar J.**, Place L.W., Gogolski J., Kipper M.J.; “Layer-by-Layer Assembly of Polysaccharide-Based Multilayers: A Spectroscopic Study of Hydrophilicity, Composition, and Ion Pairing”; *Biomacromolecules*, 12, **2011**, 2755-2765. <https://doi.org/10.1021/bm200519y>
30. **Almodóvar J.**, Kipper M.J.; “Coating Electrospun Chitosan Nanofibers With Polyelectrolyte Multilayers Using the Polysaccharides Heparin and *n,n,n*-Trimethyl Chitosan”, *Macromolecular Biosciences*, 11, **2011**, 72-76. <https://doi.org/10.1002/mabi.201000261>
31. Kisiday J.D., Hale B.W., **Almodóvar J.**, Lee C.M., Kipper M.J., McIlwraith C.W., Frisbie D.D.; “Expansion of Mesenchymal Stem Cells on Fibrinogen-Rich Protein Surfaces Derived From Blood Plasma”, *Journal of Tissue Engineering and Regenerative Medicine*, 5, **2011**, 600-611. <https://doi.org/10.1002/term.352>
32. **Almodóvar J.**, Bacon S., Gogolski J., Kisiday J.D., Kipper M.J.; “Polysaccharide-Based Polyelectrolyte Multilayer Surface Coatings can Enhance Mesenchymal Stem Cell (MSC) Response to Adsorbed Growth Factors”, *Biomacromolecules*, 11, **2010**, 2629-2639. <https://doi.org/10.1021/bm1005799>
33. Boddohi S., **Almodóvar J.**, Zhang H., Johnson P., Kipper M.J.; “Layer-by-Layer Assembly of Polysaccharide Based Nanostructured Surfaces Containing Polyelectrolyte Complex Nanoparticles”, *Colloids and Surfaces B: Biointerfaces*, 77, **2010**, 60-68. <https://doi.org/10.1016/j.colsurfb.2010.01.006>

## PATENTS

1. Almodovar J., Greenlee L., Powell J., Castilla-Casadiegos D.; “Biodegradable chitosan microneedle patch for transdermal delivery”, U.S. Provisional Pat. Ser. No. 63/088,783, Filed 10/07/2020
2. Almodovar J., Wickramasinghe R., Castilla-Casadiegos D., Chiao Y-H.; “Bi-layered electrospun membrane and method of use thereof for treating fracking waste water via membrane distillation”, U.S. Provisional Pat. Ser. No. 63/036,702, Filed 06/09/2020

## CONFERENCE PROCEEDINGS (non-peer reviewed)

1. Almodóvar J., Kipper M.J.; “Glycosaminoglycan-Based Surface Coatings: Versatile Surfaces for Growth Factor Delivery” PMSE preprints 224<sup>th</sup> American Chemical Society National Meeting, Philadelphia, PA, August **2012**
2. Almodóvar J., Kipper M.J.; “Tailoring Polysaccharide-Based Nanostructured Biomaterials for Guided Mesenchymal Stem Cell (MSC) Response”, *Annual Biochemical Engineering Symposium* (Fort Collins, CO), May **2009**
3. Almodóvar J., Dempsy L., Kipper M.J.; “FT-IR Studies on Stability of Proteins Adsorbed to Polysaccharide-Based Polyelectrolyte Multilayers”, *Annual Biochemical Engineering Symposium* (Ames, IA), April **2008**

## BOOK EDITOR

*Electrospun Biomaterials and Related Technologies*, Ed. Almodóvar J., Cham, Switzerland, Springer Nature, **2017**, P.21-56. Print.

## BOOK CHAPTER

1. Castilla Casadiegos D.A., Rivera C., Quiñones B., Almodóvar J., “Electrospun collagen biomaterials” in *Electrospun Biomaterials and Related Technologies*, Ed. Almodóvar J, Cham, Switzerland, Springer Nature, **2017**, P.21-56. Print.
2. Ramos Avilez H.V., Castilla Casadiegos D.A., Vega A.L., Perales O.J., Almodóvar J., “Production of Chitosan Coatings on Metal and Ceramic Biomaterials” in *Chitosan-based biomaterials Fundamentals Vol I*, Eds. Jennings A., Bumgardner J., Overend L., Woodhead Publishing, **2016**, P. 255-294. Print.
3. Almodóvar J., Castilla Casadiegos D.A., Ramos Avilez H.V. “Polysaccharide based biomaterials for cell-material interface” in *Cell and Material Interface: Advances in Tissue Engineering, Biosensor, Implant, and Imaging Technologies*, Ed. Vrana N., Boca Raton, FL: CRC, **2015**. P. 215-244. Print.
4. Gilde F., Guillot R., Fourel L., Almodovar J., Crouzier T., Boudou T., Picart C., “Matrix-Bound Presentation of Bone Morphogenetic Protein 2 by Multilayer Films: Fundamental Studies and Applications to Orthopedics” in *Layer-by-Layer Films for Biomedical Applications*, Eds. Picart C., Caruso F., Voegel JC., KGaA, Weinheim, Germany: Wiley-VCH Verlag GmbH & Co., **2015**. Print.
5. Kipper M., Almodóvar J. “Engineering Soft Nanostructures for Guided Cell Response” in *Nanotechnology in Tissue Engineering and Regenerative Medicine*, Ed. Popat K., Boca Raton, FL: CRC, **2011**. Print.

## INVITED TALKS

1. “Cell behavior enhancement by collagen/heparin layered coatings” Open Science Presentations Twitch TV Channel, Live Stream, October 15, 2021. Recording available here: <https://www.youtube.com/watch?v=2m55TEUghxo>



2. "Cell behavior enhancement by collagen/heparin layered coatings" Biochemistry Graduate Program, University of Arkansas, October 14, 2021
3. "Polymeric Biomaterials Lab" First-Year Engineering Program Honors Research Seminar, University of Arkansas, September 16, 2021
4. "Cell behavior enhancement by collagen/heparin layered coatings" Asian Polymer Association Bioforum on Polymeric Biomaterials & Bioengineering, Virtual Meeting, August 27, 2021
5. "Bridge to the Doctorate program at U of A" ARK-LSAMP Annual Meeting, University of Arkansas Pine Bluff, April 23, 2021
6. "Cell behavior enhancement by collagen/heparin layered coatings" Department of Chemical Engineering, University of Connecticut. April 22, 2021
7. "Cell behavior enhancement by collagen/heparin layered coatings" Department of Chemical Engineering, University of Florida. March 15, 2021
8. "Grad School/Career Panel" American Indian Science and Engineering Society Region 4 Conference. March 6, 2021.
9. "Polymeric natural materials for tissue engineering" Sports Medicine Interest Group, Ponce Health Sciences University. March 1, 2021.
10. "Polymeric natural materials for tissue engineering" Neuroengineering Association, Polytechnic University of Puerto Rico. January 14, 2021.
11. "Stem cell biomanufacturing" Guest lecture in Regenerative Medicine course (BMEG 4973) at the University of Arkansas. November 4, 2020.
12. "Polymeric Biomaterials Lab Overview" Arkansas Academy of Chemical Engineers Spring 2020 Business Meeting. April 25, 2020.
13. "Cell behavior enhancement by collagen/heparin layered coatings" ACS Layered Polymeric Systems. Windsor, CA. February 24, 2020
14. "Engineering Extracellular Matrix Mimetic Materials" Department of Biomedical Engineering, University of Arkansas. October 4, 2019
15. "Engineering Extracellular Matrix Mimetic Materials" Department of Chemical Engineering, University of Virginia. September 5, 2019
16. "Electrospun Nanofiber Membranes for Hydraulic Fracturing Wastewater Remediation via Membrane Distillation" Advanced Membrane Applications Forum Taiwan-USA-France, Chung Yuan Christian University, Taiwan. June 27, 2019
17. "Overview of Polymeric Biomaterials Lab" Department of Animal Science, University of Arkansas, November 19, 2018
18. "Engineering Extracellular Matrix Mimetic Materials" Department of Chemical Engineering, REU Program, University of Puerto Rico Mayaguez. July 12, 2017
19. "Osteoinductive Integrin-Containing Biomaterials for Bone Repair" Puerto Rico Science, Technology, and Research Trust Forward Grantees Symposium, Universidad del Este, Carolina, PR. May 27, 2017.
20. "Engineering Extracellular Matrix Mimetic Materials" Bioengineering Graduate Seminar, University of Puerto Rico Mayaguez. February 14, 2017
21. "Engineering Extracellular Matrix Mimetic Materials" Chemistry Department, University of Puerto Rico Mayaguez. September 9, 2016



22. "Engineering of Biopolymeric Nanomaterials" (Video Conference) AICHE Student Chapter Inauguration, Department of Chemical Engineering, Universidad del Atlántico, Barranquilla, Colombia. November 24, 2015
23. "Engineering of Biopolymeric Nanomaterials" Chemistry Department, University of Puerto Rico Mayaguez. September 25, 2015
24. "Engineering of Biopolymeric Nanomaterials" Department of Chemical Engineering, REU Program, University of Puerto Rico Mayaguez. July 15, 2015
25. "Electrospinning of a Collagen Solution" Integra Lifesciences & Collagen Board (via conference call), Añasco, PR. May 22, 2015
26. "Engineering of Biopolymeric Nanomaterials" Department of Chemical Engineering, Universidad del Atlántico, Barranquilla, Colombia. February 11, 2015
27. "Engineering of Biopolymeric Nanomaterials: from Fundamental Studies to Healthcare Applications" Department of Chemical Engineering, University of Puerto Rico Mayaguez. February 20, 2014.
28. "Engineering of Biopolymeric Nanomaterials: from Fundamental Studies to Healthcare Applications" Department of Chemistry, University of Puerto Rico Mayaguez. February 28, 2014.
29. "Generation of Surface Gradients in Polymeric Films Containing Biochemical and Physical Cues for Investigating Cell-Material Interactions" Advances in 3D Cell Cultures: from Biology to Technology, Center of Microelectronics in Provence, Gardanne, France. June 20, 2014.
30. "Generation of Surface Gradients in Polymeric Films Containing Biochemical and Physical Cues for Investigating Cell-Material Interactions" Department of Bioelectronics, Ecole Nationale Supérieure des Mines de Saint Etienne, Gardanne, France. June 21, 2013.

## PROFESSIONAL SERVICE

**Member:** American Chemical Society (ACS), American Institute of Chemical Engineers (AIChE), Biomedical Engineering Society (BMES), International Society for Cell and Gene Therapy (ISCT)

**Professional Society Service:** BMES International Affairs Subcommittee Member (2021 – present), BMES Diversity Committee (2021 – present).

**Editorial Board:** ACS Biomaterials Science & Engineering Early Career Board

### Reviewer:

Proposals: National Science Foundation, Comisión Nacional de Investigación Científica y Tecnológica, Gobierno de Chile, Orthopaedic Research and Education Foundation, National Institutes of Health, ORAU Ralph E. Powe Junior Faculty Enhancement Awards Program

Publications: Wiley Books publishing house, Journal of Tissue Engineering and Regenerative Medicine, International Polymer, Biomacromolecules, Langmuir, ACS Biomaterials Science & Engineering, Biomaterials Science, ACS Applied Materials and Interfaces, and Colloids and Surfaces B, Biomaterials, MDPI International Journal of Molecular Sciences, MDPI Materials, European Polymer Journal, Acta Biomaterialia, MRS Communications, Journal of Biological Engineering, Separations Science and Technology, AAAS Science Advances, ACS Nano, Cells Tissues Organs, National Science Review, Advanced Biosystems, Biochemical Engineering

### Conference Organization:

Organizing & Scientific Committee: 1<sup>st</sup> European Research Council BIOMIM Meeting held in Grenoble, France (April 10-12, 2013).

Chair: “Biomaterials I & II”( AICHE Annual Meeting 2021), “Biomaterials: Materials for engaging biology” (AICHE Annual Meeting 2020), “General Papers/New Concepts in Polymeric Materials” (PMSE, ACS Spring 2017 meeting), “Biomaterials I” (AICHE Annual Meeting 2015), “Spatially Patterned Biomaterials” (AICHE Annual Meeting 2014)

Co-Chair: “Biomaterials: Next generation technologies” (AICHE Annual Meeting 2020), “Biomaterials” (AICHE Annual Meeting 2019), “Area Plenary: Leaders in Biomaterials (Invited Talks)” (AICHE Annual Meeting 2017), “Poster Session: Materials Engineering & Sciences (08B - Biomaterials)” (AICHE Annual Meeting 2016), “Spatially Patterned Biomaterials” (AICHE Annual Meeting 2013), “Tissue Engineering Microenvironment II” (AICHE Annual Meeting 2012), “Nanostructured Biomaterials” (AICHE Annual Meeting 2012).

## COMMUNITY SERVICE

- Cabot High School, Engineering Academy STEM Advisory Board, Cabot AR (2021 – Present)
- Radians High School, Science Fair Scientific Advisor, Cayey PR (2013 – Present)

## TEACHING EXPERIENCE

### University of Arkansas:

CHEG 2133 Fluid Mechanics (Fall 2018, Spring 2019, Fall 2019, Spring 2020, Spring 2021)  
CHEG 5801/6801 Graduate Seminar (Spring 2019, Fall 2019, Spring 2020, Fall 2020, Spring 2021)  
CHEG 588V Special Problems: Soft Biomaterials (Fall 2021)

### University of Puerto Rico – Mayaguez:

BING 6115 Biomaterials (Spring 2017)  
INQU 4010 Momentum Transfer Operations (Fall 2013, Spring 2014, Fall 2014, Spring 2015)  
INQU 4011 Chemical Engineering Thermodynamics I (Spring 2014)  
INQU 6029/8996 Graduate Chemical Engineering Seminar (Spring 2014 –Spring 2016)  
INQU 4027 Chemical Engineering Seminar (Fall 2013, Fall 2014, Fall 2015)  
INQU 4002 Mass Transfer Operations (Summer 2015, Fall 2015, Spring 2016, Fall 2016, Spring 2017)  
INQU 4005 Material and Energy Balances (Summer 2016, Fall 2017, Spring 2018)  
INQU 4998 Undergraduate Research (Every semester since spring 2014)  
INQU 6036 Special Problems (Fall 2015, Fall 2016)

### Grenoble Institute of Technology:

Cell Culture and Confocal Microscopy. International Summer School at MINATEC. (June 2013)  
Introduction to Biomaterials. FAME Erasmus Mundus Master of Science program. (November 26, 2012 – October 17, 2012)

### Other:

Fluid Mechanics Refresher Course. Lilly del Caribe, Carolina PR. (May 2016)

## COLLABORATORS (UARK: U OF ARKANSAS, UPRM; U OF PUERTO RICO MAYAGUEZ)

Aldo Acevedo, Chemical Engineering, UPRM  
Alberto Albis, Chemical Engineering, Universidad del Atlántico, visiting Fulbright Scholar Spring 2021  
Barbara Calcagno, Materials Engineering, UPRM  
Maribella Domenech, Chemical Engineering, UPRM  
Andrés García, Mechanical Engineering, Georgia Institute of Technology  
Lauren Greenlee, Chemical Engineering, The Pennsylvania State University  
Luis Juncos, Professor of Medicine, University of Arkansas for Medical Sciences  
Karthik Nayani, Chemical Engineering, UARK

Jeremy Powell, Animal Science, UARK  
Oscar J. Perales, Materials Engineering, UPRM  
Anibal Quintana, Integra Lifesciences  
Raj Rao, Biomedical Engineering, UARK  
Shannon Servoss, Chemical Engineering, UARK  
Paul Sundaram, Mechanical Engineering, UPRM  
Madeline Torres-Lugo, Chemical Engineering, UPRM  
Ranil Wickramasinghe, Chemical Engineering, UARK

## **STUDENTS SUPERVISED**

### **Current Graduate Students at UARK:**

Josh Phipps, (PhD in Cell and Molecular Biology Expected Spring 2022)  
Luis C. Pinzon (PhD in Chemical Engineering Expected Spring 2022)  
Mahsa Haseli (PhD in Chemical Engineering Expected Spring 2024)  
Hemanta Timsina (PhD in Chemical Engineering Expected Spring 2024)  
Roaa Hadi, (PhD in Cell and Molecular Biology Expected Spring 2025)  
Katherine Miranda Muñoz (Biomedical Engineering Expected Spring 2026)

### **Current Graduate Students at UPRM as co-advisor:**

Radames Ayala, MS (PhD in Bioengineering Expected Fall 2021)  
Said Cifuentes, MS (PhD in Bioengineering Expected Fall 2021)

### **Former Graduate Students:**

David Castilla Casadiego, MS (PhD in Chemical Engineering, Spring 2021)  
David Castilla Casadiego, (MS in Chemical Engineering, Spring 2016)  
Heleine Ramos Avilez (ME in Chemical Engineering, Fall 2016)  
Carol Rivera (MS in Bioengineering Spring 2018)

### **Current Undergraduate Students:**

Frank Omar Aparicio Solis (Chemical Engineering)  
Luke Smith (Chemical Engineering)  
Ben Wilson (Chemical Engineering)  
Jasmine McTyer (Summer 2021 REU Student)  
Trong Nguyen (Chemical Engineering)  
Hector Apodaca Reyes (Chemical Engineering)

### **Former Undergraduate Students (from UARK unless stated otherwise):**

John Magness (Chemical Engineering)  
Colton Rogers (Chemical Engineering)  
Claudia Smith (Chemical Engineering)  
Tyler Merreighm (Biomedical Engineering)  
Aldaly Pineda Hernandez (Chemical Engineering)  
Sandrina DePaz (Chemical Engineering)  
Elizabeth Gomez (Chemical Engineering)  
Quinn Stiegman (Chemical Engineering)  
Paula V. Perez Murgas (Biology)  
Nina Perry (Chemical Engineering REU Program, Schoolcraft College)  
Colby Huynh (Chemical Engineering)  
Derek Burton (Chemical Engineering)  
Kyle Key (Chemical Engineering)

**Former Undergraduate Students (from UPRM unless stated otherwise):**

Alexander Collado (Chemical Engineering)  
Wisberty Gordian (Chemical Engineering)  
Luis Loyo (Chemical Engineering)  
Jacobly Shipmon (Department of Chemical, Biological and Bio Engineering, North Carolina Agricultural and Technical State University)  
Kiara Vega (Biology & Psychology)  
Michael Maldonado (Mechanical Engineering)  
Ferdinand Zavala (Chemical Engineering)  
Coral Alvarado (Biology)  
Carlo Bosques Casillas (Industrial Biotechnology)  
Edwin Burgos (Industrial Microbiology)  
Giancarlo Gonzalez Areizaga (Chemistry)  
Adriana C. Mulero Russe (Chemical Engineering)  
Luis Peña (Microbiology)  
Beatriz Quiñones (Industrial Microbiology)  
Marcos R. Rodríguez Muñoz (Chemical Engineering)  
Bethsymarie Soto (Chemical Engineering)

**PRESENTATIONS AT INTERNATIONALS, NATIONAL, AND REGIONAL MEETINGS**

(\*presenter)

1. Pinzon Herrera, L. C. \*, Almodovar J.; “Surface modification with heparin-collagen showed enhanced properties of nerve guide conduits” Poster presented at the BMES Annual Meeting in Orlando, Fl. October 2021
2. Timsina, H. \*, Almodovar J.; “A comparative evaluation of layer-by-layer assembly technique for surface modification of microcarriers used in human mesenchymal stromal cell manufacturing” Poster presented at the BMES Annual Meeting in Orlando, Fl. October 2021
3. Gregory, E. \*, Atwood, C., Pinzon-Herrera L., Almodovar J., Lee, SO., Song Y.H., “Examining breast cancer response to metformin using tissue-engineered in vitro testbeds” Poster presented at the BMES Annual Meeting in Orlando, Fl. October 2021
4. Miranda-Munoz K. \*, Castilla-Casadiago D.A., Almodovar J.; “Design, Characterization, and Modeling of a Chitosan Microneedle Patch for Transdermal Delivery of Meloxicam as a Pain Management Strategy for Use in Cattle” LatinXChem 2021 Twitter Conference. September 2021
5. Almodovar J. \*; “MSC culture and immunosuppressive properties enhancement by collagen/heparin layered coatings” Poster presented at the International Society for Cell & Gene Therapy North America Region Annual Meeting in New Orleans, LA. May 2021
6. Miranda-Munoz K. \*, Castilla-Casadiago D.A., Powell J.G., Greenlee L.F., Almodovar J.; “Construction and Characterization of Biodegradable Chitosan Microneedle Patch for Transdermal Delivery of Meloxicam as a Pain Management Drug Approach for Use in Cattle” Video recorded presentation presented at the LatinX Biomedical Engineering Symposium, Miami, Fl. March 2021
7. Pinzon-Herrera L., Almodovar J.; “Improved adhesion of human Schwann cells on modified surfaces with heparin-collagen layer-by-layer coatings” Video recorded presentation presented at the LatinX Biomedical Engineering Symposium, Miami, Fl. March 2021
8. Haseli M. \*, Castilla-Casadiago D.A., Almodovar J.; “The effect of heparin/collagen layer-by-layer coating in immunomodulatory functions of mesenchymal stromal/stem cells stimulated by IFN-gamma” Poster presented at the AIChE Annual Meeting in San Francisco, CA. November 2020

9. Roberts J.\*, Corbitt J., Servoss S.L., Blankenship H., Almodovar J., Pinzon-Herrera L.C., Castilla-Casadieago D.A.; “Incorporation of peptid microsphere and polyelectrolyte multilayered depositions for guided neural stem cell differentiation” Poster presented at the AIChE Annual Meeting in San Francisco, CA. November 2020
10. Roberts J.\*, Servoss S.L., Almodovar J., Pinzon-Herrera L.C., Blankenship H., Brinza K.M.; “Incorporation of bio-inspired polymeric coatings for Schwann cell and mesenchymal stem cell development in neural tissue engineering” Poster presented at the AIChE Annual Meeting in San Francisco, CA. November 2020
11. Timsina H. \*, Almodovar J.; “Engineering of collagen/heparin microcarrier coatings for human mesenchymal stromal cell manufacturing” Poster presented at the AIChE Annual Meeting in San Francisco, CA. November 2020
12. Castilla-Casadieago D.A. \*, Miranda-Munoz K., Greenlee L.F., Powell J.G., Almodovar J.; “Construction and characterization of biodegradable chitosan microneedle patch for transdermal delivery of meloxicam as a pain management drug approach for use in cattle” Paper presented at the AIChE Annual Meeting in San Francisco, CA. November 2020
13. Pinzon-Herrera L.C. \*, Key K., Almodovar J.; “Improved adhesion of human Schwann cells on modified surfaces with heparin-collagen layer-by-layer coatings: a real-time monitoring study” Paper presented at the AIChE Annual Meeting in San Francisco, CA. November 2020
14. Chiao Y.-H., Almodovar J., Wickramasinghe R.\*; “Novel fouling resistant electrospun membranes for treating hydraulic fracturing flow back and produced water” Paper presented at the AIChE Annual Meeting in San Francisco, CA. November 2020
15. Cifuentes S. \*, Almodovar J., Domenech M.: “Impact of Heparin/Collagen Surface Deposited Nanolayers on the Expansion and Immunophenotype of Mesenchymal Stem Cells” Paper presented at the BMES Cellular and Molecular Engineering Conference, San Juan, PR. January 2020
16. Pinzon-Herrera L.C. \*, Almodovar J.: “Heparin-collagen layer-by-layer coatings enhance adhesion and proliferation of Schwann cells for nerve tissue regeneration” Paper presented at the AIChE Annual Meeting in Orlando, FL. November 2019
17. Roberts J.\*, Pinzon-Herrera L.C., Corbitt J., Servoss S., Almodovar J.; “The Incorporation of Bio-Inspired Polymeric Coatings for Enhanced Schwann Cell Proliferation and Stem Cell Differentiation” Poster presented at the AIChE Annual Meeting in Orlando, FL. November 2019
18. Castilla-Casadieago D.A., Garcia J.R., Lam W., Garcia A.J., Almodovar J.\*; “Heparin/Collagen coatings improve human mesenchymal stromal cell response to interferon gamma” Poster presented at the International Society for Cell & Gene Therapy North America Region Annual Meeting in Madison, WI. September 2019
19. Almodovar J. “Electrospun collagen membranes from mild solvents” Paper presented at the Aseanian Membrane Society 12 meeting in Jeju, Korea. July 2019
20. DePaz S. \*, Chiao Y.H., Castilla-Casadieago D.A., Wickramasinghe R., Almodovar J.; “Electrospun Nanofiber Membranes for Hydraulic Fracturing Wastewater Remediation via Membrane Distillation” Poster presented at the AIChE Mid-America Conference in Rolla, MO. April 2019
21. Pinzon L.C. \*, Almodovar J.: “Evaluation of Schwann Cell Proliferation on Heparin-Collagen Layer-by-Layer Coatings” Poster presented at the Society for Biomaterials Annual Meeting in Seattle WA. April 2019
22. Castilla-Casadieago D.A., Garcia J.R., Lam W., Garcia A.J., Almodovar J.\*; “Collagen/heparin coatings improve human mesenchymal stem cells response to interferon gamma” Paper presented at the AIChE Annual Meeting in Pittsburg, PA. October 2018

23. Castilla-Casadiegos D.A.\*, Garcia J.R., Lam W., Garcia A.J., Almodovar J.; “Layer-by-layer assemblies of collagen/heparin towards the manufacturing of human mesenchymal stem cells” Poster presented at the BMES Annual Meeting in Atlanta, GA. October 2018
24. Mulero A.\*, Pinzon L., Almodovar J.; “Evaluation of Layer-by-Layer (LBL) Films for Nerve Growth Factor (NGF) Delivery Utilizing iCelligence Technology” Paper presented at the 2018 Junior Technical Meeting (JTM) and the Puerto Rico Interdisciplinary Meeting (PRISM) in Gurabo, PR. April 2018
25. Burgos-Rossy E.\*, Quiñones B., Castilla D., Almodovar J.; “Evaluating the functional capabilities of polymeric nanostratified surfaces modifications for applications in tissue engineering” Paper presented at the 2018 Junior Technical Meeting (JTM) and the Puerto Rico Interdisciplinary Meeting (PRISM) in Gurabo, PR. April 2018
26. Rivera-Marinez, C.\*, Mendez, J., Almodovar J.; “Electrospun Collagen Scaffold for Peripheral Nerve Regeneration” Poster presented at the Society for Biomaterials Annual Meeting in Atlanta GA. April 2018
27. Pinzon L.C.\*, Mulero A., Almodovar J.; “Evaluation of Heparin-Collagen Layer-by-Layer films as Nerve Growth Factor Reservoirs” Poster presented at the Society for Biomaterials Annual Meeting in Atlanta GA. April 2018
28. Vega-Figueroa K.\*, Santillán J., Almodovar J., López J., Ortiz E.O., Nicolau E.: “Towards an arsenic-specific aptasensor based on Au/thiol interactions” Poster presented at the 253<sup>th</sup> ACS National Meeting and Exposition in San Francisco, CA. April 2017
29. Almodovar J.\*, Castilla D., Maldonado M., Sundaram P.: “Engineering nanostructured hydroxyapatite/collagen composite scaffolds by green electrospinning” Paper presented at the 253<sup>th</sup> ACS National Meeting and Exposition in San Francisco, CA. April 2017
30. Quiñones B.\*, Castilla D., Almodovar J.; “Characterization of polymeric films prepared by the Layer- by-Layer technique: An infrared variable angle spectroscopic ellipsometry study” Paper presented at the 2017 Emerging Researchers National (ERN) Conference in STEM, Washington DC. March 2017
31. Almodovar J.\* “Regeneration of damaged neural tissue using a collagen scaffold containing neurotrophins” PRINBRE External Advisory Committee Meeting, Dorado, PR. March 2017
32. Quiñones B.\*, Castilla D., Almodovar J.; “Engineering biopolymeric nanostructured fibers and films for tissue engineering applications” Paper presented at the 2016 Symposium on Biomaterials Science, New Jersey Center for Biomaterials in Iselin, NJ. October 2016
33. Castilla D.\*, Almodovar J.; “Engineering Versatile and Stable Collagen Nanofibers from a Mild Solvent” Poster presented at the BMES Annual Meeting in Minneapolis, MN. October 2016
34. Castilla D.\*, Maldonado M., Sundaram P., Almodóvar J.; “Green electrospinning of 3D biomimetic scaffolds of bone extracellular matrix” Poster presented at the Puerto Rico Science Technology and Research Trust 1st Forward Research and Innovation Summit in San Juan, PR. September 2016.
35. Pinzon LC.\*, Castilla D., Quiñones B., Almodóvar J.; “Characterization of polymeric films prepared by the Layer-by-Layer technique: evaluating the rinsing step” Poster presented at the Puerto Rico Science Technology and Research Trust 1st Forward Research and Innovation Summit in San Juan, PR. September 2016.
36. Almodóvar J.\*, Castilla D.; “Engineering of a collagen-based extracellular matrix mimetic scaffold via electrospinning” Paper presented at the 10<sup>th</sup> World Biomaterials Congress in Montréal, Canada. May 2016
37. Castilla D.\*, Almodóvar J.; “Production of a type I collagen nanofibrous scaffold via electrospinning using a mild solvent that preserves its chemical structure” Poster presented at the Institute for Functional Nanomaterials Annual Meeting in Caguas, PR. April 2016

38. Almodovar J.\*; “Engineering biopolymeric nano materials for tissue engineering applications” Poster presented at the Institute for Functional Nanomaterials External Advisory Board Meeting in Rio Piedras, PR. March 2016
39. Quiñones B.\*, Castilla D., Almodóvar J.; “Polysaccharide-based polyelectrolyte multilayers: Physicochemical characterization and in vitro studies” Poster presented at the UPRM’s Department of Biology Annual Symposium in Mayaguez, PR. April 2016
40. Quiñones B.\*, Castilla D., Almodóvar J.; “Polysaccharide-based polyelectrolyte multilayers: Physicochemical characterization and in vitro studies” Paper presented at the 6<sup>th</sup> Annual Research Symposium of the Asociación de Estudiantes de Medicina de Puerto Rico in San Juan, PR. April 2016
41. Burgos E.\*, Quiñones B., Castilla D., Almodóvar J.; “Evaluating the effect of degree of crosslinking and RGD peptide over cellular adhesion in polymeric bilayers” Paper presented at the 6<sup>th</sup> Annual Research Symposium of the Asociación de Estudiantes de Medicina de Puerto Rico in San Juan, PR. April 2016
42. Quiñones B.\*, Castilla D., Almodóvar J.; “Polysaccharide-based polyelectrolyte multilayers: Physicochemical characterization and in vitro studies” Poster presented at the XXI Sigma Xi Poster Day at UPRM in Mayaguez, PR. April 2016
43. Quiñones B.\*, Castilla D., Almodóvar J.; “Polysaccharide-based polyelectrolyte multilayers: Physicochemical characterization and in vitro studies” Paper presented at the 2016 Junior Technical Meeting (JTM) and the Puerto Rico Interdisciplinary Meeting (PRISM) in Ponce, PR. March 2016
44. Burgos E.\*, Quiñones B., Castilla D., Almodóvar J.; “Evaluating the effect of degree of crosslinking and RGD peptide over cellular adhesion in polymeric bilayers” Paper presented at the 2016 Junior Technical Meeting (JTM) and the Puerto Rico Interdisciplinary Meeting (PRISM) in Ponce, PR. March 2016
45. Almodóvar J.\*; “Engineering of Biopolymeric Nanomaterials” Paper presented at the Society of Hispanic Professional Engineers Conference in Baltimore, MD. November 2015
46. Castilla D.\*, Almodóvar J.; “Production of a type I collagen nanofibrous scaffold via electrospinning using a mild solvent that preserves its chemical structure” Poster presented at the Society of Hispanic Professional Engineers Conference in Baltimore, MD. November 2015
47. Castilla D.\*, Almodóvar J.; “Production of a type I collagen nanofibrous scaffold via electrospinning using a mild solvent that preserves its chemical structure” Poster presented at the 39<sup>th</sup> Senior Technical Meeting ACS Puerto Rico Section in Ponce, PR. November 2015
48. Rivera C.\*, Castilla D., Almodóvar J.; “Engineering biopolymeric nanofibers as biomaterials for tissue regeneration” Poster presented at the URGREAT-MBRS-RISE Undergraduate Research Symposium in Carolina, PR. October 2015
49. Shipmon J., Castilla D., Almodóvar J.; “Electrospinning of Collagen Nanofibers” Poster presented at the REU RMSM UPRM Poster Session, Mayaguez, PR. July 2015
50. Rivera C.\*, Castilla D., Almodóvar J.; “Engineering biopolymeric nanofibers as biomaterials for tissue regeneration” Poster presented at the 8<sup>th</sup> Northeastern Alliance (NEA) Science Day in Mayagüez, PR. March 2015
51. Soto B.\*, Castilla D., Almodóvar J.; “Novel Biomaterials for Tissue Regeneration” Paper presented at the 2015 Junior Technical Meeting (JTM) and the Puerto Rico Interdisciplinary Meeting (PRISM) in Rio Piedras, PR. March 2015
52. Almodovar J., Picart C.; “Surface gradients in biopolymeric films containing biochemical and physical cues for investigating cell-material interactions” Paper presented at the 249<sup>th</sup> ACS National Meeting and Exposition in Denver, CO. March 2015



53. Almodóvar J.,\* Guillot R., Monge C., Vollaire J., Selimović Š., Luc-Coll J., Khademhosseini A., Picart C.; “Spatial Patterning of BMP-2 and BMP-7 on Biopolymeric Films and the Guidance of Muscle Cell Fate” Paper presented at the 4<sup>th</sup> International Colloids Conference in Madrid, Spain. June 2014
54. Almodóvar J.,\* Picart C.; “Cellular Response on Growth Factor and Stiffness Gradients on Polyelectrolyte Multilayers” Paper presented at the University of Puerto Rico Medical Sciences Campus 34<sup>th</sup> Annual Research and Education Forum. April 2014
55. Almodóvar J.,\* Dalonneau F., Boudou T., Khademhosseini A., Picart C.; “Cellular Response on Matrix-Bound Growth Factor Gradients and Stiffness Gradients Generated on Polyelectrolyte Multilayer Films” Poster presented at the BMES Annual Meeting in Seattle, WA. September 2013
56. Almodóvar J.,\* Dalonneau F., Boudou T., Khademhosseini A., Picart C.; “Cellular Response on Matrix-Bound Growth Factor Gradients and Stiffness Gradients Generated on Polyelectrolyte Multilayer Films” Poster presented at the FEBS Biological Surfaces and Interfaces Workshop in Catalonia, Spain. July 2013
57. Almodóvar J.,\* Dalonneau F., Boudou T., Khademhosseini A., Picart C.; “Polyelectrolyte Multilayer Films Containing Gradients of Physical and Biochemical Cues: A Versatile Tool to Investigate Cellular Processes” Poster presented at the 6<sup>th</sup> Nano and Microsystems for Cell Biology Workshop in Grenoble, France. April 2013
58. Almodóvar J.,\* Crouzier T., Selimović Š., Khademhosseini A., Picart C.; “Engineering of Surface Gradients On Biopolymeric Films for the Spatial Presentation of Growth Factor and Physical Properties.” Paper presented at the AICHE Annual Meeting in Pittsburgh, PA. November 2012
59. Almodóvar J.,\* Mower J., Banerjee A., Sarkar A., Ehrhart N., Kipper M.J.; “Periosteum-Mimetic Polysaccharide-Based Coatings for Cortical Bone Allografts towards Orthopedic Tissue Engineering Applications.” Paper presented at the AICHE Annual Meeting in Pittsburgh, PA. November 2012
60. Gilde F., Maniti O., Guillot R., Almodóvar J.,\* Picart C.; “Structure and Stability of Poly(L-lysine)/Hyaluronan Thin Films as Nanoreservoirs for the Bone Morphogenetic Protein-2.” Paper presented at the AICHE Annual Meeting in Pittsburgh, PA. November 2012
61. Fourel L., Almodóvar J.,\* Albiges-Rizo C., Picart C.; “Mechano-Transduction Pathway Interference with BMP-2 Signaling Cascade” Paper presented at the AICHE Annual Meeting in Pittsburgh, PA. November 2012
62. Almodóvar J.,\* Crouzier T., Selimović Š., Khademhosseini A., Picart C.; “Generation of Surface Gradients in Polymeric Films Containing Biochemical and Physical Cues for Investigating Cell-Material Interactions” Paper presented at the BMES Annual Meeting in Atlanta, GA. November 2012
63. Almodóvar J.,\* Mower J., Banerjee A., Sarkar A., Ehrhart N., Kipper M.J.; “Polymeric Coatings for Cortical Bone Allografts Towards Orthopedic Tissue Engineering Applications” Poster presented at the BMES Annual Meeting in Atlanta, GA. November 2012
64. Fourel L., Almodóvar J.,\* Albiges-Rizo C., Picart C.; “Synergistic Signaling Between Integrin Receptors and Matrix-Bound Growth Factor Receptors Revealed via Biopolymeric Films Containing the Bone Morphogenetic Protein 2” Poster presented at the BMES Annual Meeting in Atlanta, GA. November 2012
65. Almodóvar J., Kipper M.J.\*; “Glycosaminoglycan-Based Surface Coatings: Versatile Surfaces for Growth Factor Delivery” Paper presented at the 224<sup>th</sup> ACS National Meeting, Philadelphia, PA. August 2012
66. Almodóvar J.,\* Crouzier T., Selimović Š., Khademhosseini A., Picart C.; “Generation of Surface Gradients of Biomolecules on Biopolymer-Based Polyelectrolyte Multilayer Films for Investigating

- Cell-Materials Interactions.” Poster presented at the Colloids and Nanomedicine Conference in Amsterdam, Netherlands. July 2012
67. Almodóvar J.,\* Place L.W., Gogolski J., Kipper M.J.; “Layer-by-Layer Assembly of Polysaccharide-Based Multilayers: A Spectroscopic Study of Hydrophilicity, Composition, and Ion Pairing.” Poster presented at the Colloids and Nanomedicine Conference in Amsterdam, Netherlands. July 2012
  68. Almodóvar J.,\* Mower J., Banerjee A., Sarkar A., Kipper M.J.; “Functionalization of Devitalized Bone Using Polysaccharide-Based Multilayers Supports Mammalian Cell Growth and Inhibits Bacterial Growth.” Paper presented at the 14<sup>th</sup> International Conference on Organized Molecular Films in Paris, France. July 2012
  69. Almodóvar J.,\* Crouzier T., Selimović Š, Khademhosseini A., Picart C.; “Generation of Surface Gradients of Biomolecules on Biopolymer-Based Polyelectrolyte Multilayer Films for Investigating Cell-Materials Interactions.” Poster presented at the Nano and Microsystems for Cell Biology Workshop in Grenoble, France. April 2012
  70. Almodóvar J.,\* Bacon S., Zomer Volpato F., Migliaresi C., Kisiday J.D., Kipper M.J.; “Electrospun Chitosan Nanofibers for Growth Factor Delivery and Mesenchymal Stem Cell Activation.” Poster presented at the AIChE Annual Meeting in Minneapolis, MN. October 2011
  71. Almodóvar J.,\* Bacon S., Zomer Volpato F., Migliaresi C., Kisiday J.D., Kipper M.J.; “Electrospun Chitosan Nanofibers for Growth Factor Delivery and Mesenchymal Stem Cell Activation.” Paper presented at the BMES Annual Meeting in Hartford, CT. October 2011
  72. Mower J.,\* Almodóvar J., Kipper M.J.; “Coating Ovine Bone With Polyelectrolyte Multilayers Using the Polysaccharides Heparin and Chitosan” Poster presented at the BMES Annual Meeting in Hartford, CT. October 2011
  73. Almodóvar J.,\* Bacon S., Gogolski J., Kisiday J.D., Kipper M.J.; “Polysaccharide-Based Polyelectrolyte Multilayer Surface Coatings can Enhance Mesenchymal Stem Cell (MSC) Response to Adsorbed Growth Factors.” Paper presented at the AIChE Annual Meeting in Salt Lake City, UT. November 2010
  74. Almodóvar J.,\* Bacon S., Gogolski J., Kisiday J.D., Kipper M.J.; “Polysaccharide-Based Polyelectrolyte Multilayer Surface Coatings can Enhance Mesenchymal Stem Cell (MSC) Response to Adsorbed Growth Factors.” Poster presented at the BMES Annual Meeting in Austin, TX. October 2010
  75. Volpato F.Z., Almodóvar J.,\* Kipper M.J., Migliaresi C.; “Functionalization of Chitosan Electrospun Networks by Polyelectrolyte Multilayer and Nanoparticle Adsorption.” Paper presented at the Materials Research Society Functionalized Nanobiomaterials for Medical Applications Meeting in Denver, CO. October 2010
  76. Almodóvar J.,\* Bacon S., Gogolski J., Kisiday J.D., Kipper M.J.; “Polysaccharide-Based Polyelectrolyte Multilayer Surface Coatings can Enhance Mesenchymal Stem Cell (MSC) Response to Adsorbed Growth Factors.” Poster presented at the Nanotechnology Symposium in Fort Collins, CO. April 2010
  77. Gogolski J.,\* Almodóvar J., Kipper M.J.; “Surface Modification of Titanium Using Polysaccharide-Based Polyelectrolyte Multilayer.” Paper presented at the AIChE Regional Meeting, Rocky Mountain Region in Albuquerque, NM. April 2010
  78. Almodóvar J.,\* Kipper M.J.; “Tailoring Polysaccharide-Based Nanostructured Biomaterials for Guided Mesenchymal Stem Cell (MSC) Response.” Paper presented at the AIChE Annual Meeting in Nashville, TN. November 2009
  79. Boddohi S.,\* Almodóvar J., Johnson P.A., and Kipper M.J., “Nanostructured Polysaccharide Based Surface Coatings: Tailored Morphology and Chemistry.” Paper presented at the AIChE Annual Meeting in Nashville, TN. November 2009

80. Almodóvar J.,\* Kipper M.J.; “Tailoring Polysaccharide-Based Nanostructured Biomaterials for Guided Mesenchymal Stem Cell (MSC) Response.” Poster presented at the Annual Biochemical Engineering Symposium in Pringree Park, CO. May 2009
81. Almodóvar J.,\* Kipper M.J.; “FT-IR Studies on Stability of Proteins Adsorbed to Polysaccharide-Based Polyelectrolyte Multilayers.” Paper presented at the AIChE Annual Meeting in Philadelphia, PA. November 2008
82. Almodóvar J.,\* Gogolski J., Kipper M.J.; “Nanostructured Polysaccharide-Based Surface for MSC Differentiation.” Poster presented at the AIChE Annual Meeting in Philadelphia, PA. November 2008
83. Almodóvar J.,\* Kipper M.J.; “FT-IR Studies on Stability of Proteins Adsorbed to Polysaccharide-Based Polyelectrolyte Multilayers.” Paper presented at the Annual Biochemical Engineering Symposium in Ames, IA. April 2008